

1. The first part of the paper is devoted to the study of the asymptotic behavior of the solutions of the system (1) as  $\epsilon \rightarrow 0$ . It is shown that the solutions of the system (1) converge to the solutions of the system (2) as  $\epsilon \rightarrow 0$ .

acg gag aac gac ctc aac cag ggg gac gat cat ggc ttc tcc ccc ttg 270  
Thr Glu Asn Asp Leu Asn Gln Gly Asp Asp His Gly Phe Ser Pro Leu  
25 30 35

cac tgg gcc tgc cga gag ggc cgc tct gct gtg gtt gag atg ttg atc His Trp Ala Cys Arg Glu Gly Arg Ser Ala Val Val Glu Met Leu Ile 40 45 50	318
atg cgg ggg gca cgg atc aat gta atg aac cgt ggg gat gac acc ccc Met Arg Gly Ala Arg Ile Asn Val Met Asn Arg Gly Asp Asp Thr Pro 55 60 65 70	366
ctg cat ctg gca gcc agt cat gga cac cgt gat att gta cag aag cta Leu His Leu Ala Ala Ser His Gly His Arg Asp Ile Val Gln Lys Leu 75 80 85	414
ttg cag tac aag gca gac atc aat gca gtg aat gaa cac ggg aat gtg Leu Gln Tyr Lys Ala Asp Ile Asn Ala Val Asn Glu His Gly Asn Val 90 95 100	462
ccc ctg cac tat gcc tgt ttt tgg ggc caa gat caa gtg gca gag gac Pro Leu His Tyr Ala Cys Phe Trp Gly Gln Asp Gln Val Ala Glu Asp 105 110 115	510
ctg gtg gca aat ggg gcc ctt gtc agc atc tgt aac aag tat gga gag Leu Val Ala Asn Gly Ala Leu Val Ser Ile Cys Asn Lys Tyr Gly Glu 120 125 130	558
atg cct gtg gac aaa gcc aag gca ccc ctg aga gag ctt ctc cga gag Met Pro Val Asp Lys Ala Lys Ala Pro Leu Arg Glu Leu Leu Arg Glu 135 140 145 150	606
cgg gca gag aag atg ggc cag aat ctc aac cgt att cca tac aag gac Arg Ala Glu Lys Met Gly Gln Asn Leu Asn Arg Ile Pro Tyr Lys Asp 155 160 165	654
aca ttc tgg aag ggg acc acc cgc act cgg ccc cga aat gga acc ctg Thr Phe Trp Lys Gly Thr Thr Arg Thr Arg Pro Arg Asn Gly Thr Leu 170 175 180	702
aac aaa cac tct ggc att gac ttc aaa cag ctt aac ttc ctg acg aag Asn Lys His Ser Gly Ile Asp Phe Lys Gln Leu Asn Phe Leu Thr Lys 185 190 195	750
ctc aac gag aat cac tct gga gag cta tgg aag ggc cgc tgg cag ggc Leu Asn Glu Asn His Ser Gly Glu Leu Trp Lys Gly Arg Trp Gln Gly 200 205 210	798
aat gac att gtc gtg aag gtg ctg aag gtt cga gac tgg agt aca agg Asn Asp Ile Val Val Lys Val Leu Lys Val Arg Asp Trp Ser Thr Arg 215 220 225 230	846
aag agc agg gac ttc aat gaa gag tgt ccc cgg ctc agg att ttc tcg Lys Ser Arg Asp Phe Asn Glu Glu Cys Pro Arg Leu Arg Ile Phe Ser 235 240 245	894
cat cca aat gtg ctc cca gtg cta ggt gcc tgc cag tct cca cct gct His Pro Asn Val Leu Pro Val Leu Gly Ala Cys Gln Ser Pro Pro Ala 250 255 260	942
cct cat cct act ctc atc aca cac tgg atg ccg tat gga tcc ctc tac	990

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Pro His Pro Thr Leu Ile Thr His Trp Met Pro Tyr Gly Ser Leu Tyr
265                               270                               275

aat gta cta cat gaa ggc acc aat ttc gtc gtg gac cag agc cag gct 1038
Asn Val Leu His Glu Gly Thr Asn Phe Val Val Asp Gln Ser Gln Ala
280                               285                               290

gtg aag ttt gct ttg gac atg gca agg ggc atg gcc ttc cta cac aca 1086
Val Lys Phe Ala Leu Asp Met Ala Arg Gly Met Ala Phe Leu His Thr
295                               300                               305                               310

cta gag ccc ctc atc cca cga cat gca ctc aat agc cgt agt gta atg 1134
Leu Glu Pro Leu Ile Pro Arg His Ala Leu Asn Ser Arg Ser Val Met
315                               320                               325

att gat gag gac atg act gcc cga att agc atg gct gat gtc aag ttc 1182
Ile Asp Glu Asp Met Thr Ala Arg Ile Ser Met Ala Asp Val Lys Phe
330                               335                               340

tct ttc caa tgt cct ggt cgc atg tat gca cct gcc tgg gta gcc ccc 1230
Ser Phe Gln Cys Pro Gly Arg Met Tyr Ala Pro Ala Trp Val Ala Pro
345                               350                               355

gaa gct ctg cag aag aag cct gaa gac aca aac aga cgc tca gca gac 1278
Glu Ala Leu Gln Lys Lys Pro Glu Asp Thr Asn Arg Arg Ser Ala Asp
360                               365                               370

atg tgg agt ttt gca gtg ctt ctg tgg gaa ctg gtg aca cgg gag gta 1326
Met Trp Ser Phe Ala Val Leu Leu Trp Glu Leu Val Thr Arg Glu Val
375                               380                               385                               390

ccc ttt gct gac ctc tcc aat atg gag att gga atg aag gtg gca ttg 1374
Pro Phe Ala Asp Leu Ser Asn Met Glu Ile Gly Met Lys Val Ala Leu
395                               400                               405

gaa ggc ctt cgg cct acc atc cca cca ggt att tcc cct cat gtg tgt 1422
Glu Gly Leu Arg Pro Thr Ile Pro Pro Gly Ile Ser Pro His Val Cys
410                               415                               420

aag ctc atg aag atc tgc atg aat gaa gac cct gca aag cga ccc aaa 1470
Lys Leu Met Lys Ile Cys Met Asn Glu Asp Pro Ala Lys Arg Pro Lys
425                               430                               435

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Phe Asp Met Ile Val Pro Ile Leu Glu Lys Met Gln Asp Lys
440                               445                               450

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gctgggggtc catccccctt ccccatccct accactgtgc gcaagagggg cgggctcaga 1692
gctttgtcac ttgccacatg gtgtctccca acatggggagg gatcagcccc gcctgtcaca 1752
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<210> 2

<211> 452

<212> PRT

<213> Homo sapiens

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His Gly Phe Ser Pro Leu His Trp Ala Cys Arg Glu Gly Arg Ser Ala
          35          40          45
Val Val Glu Met Leu Ile Met Arg Gly Ala Arg Ile Asn Val Met Asn
          50          55          60
Arg Gly Asp Asp Thr Pro Leu His Leu Ala Ala Ser His Gly His Arg
65          70          75          80
Asp Ile Val Gln Lys Leu Leu Gln Tyr Lys Ala Asp Ile Asn Ala Val
          85          90          95
Asn Glu His Gly Asn Val Pro Leu His Tyr Ala Cys Phe Trp Gly Gln
          100          105          110
Asp Gln Val Ala Glu Asp Leu Val Ala Asn Gly Ala Leu Val Ser Ile
          115          120          125
Cys Asn Lys Tyr Gly Glu Met Pro Val Asp Lys Ala Lys Ala Pro Leu
          130          135          140
Arg Glu Leu Leu Arg Glu Arg Ala Glu Lys Met Gly Gln Asn Leu Asn
145          150          155          160
Arg Ile Pro Tyr Lys Asp Thr Phe Trp Lys Gly Thr Thr Arg Thr Arg
          165          170          175
Pro Arg Asn Gly Thr Leu Asn Lys His Ser Gly Ile Asp Phe Lys Gln
          180          185          190
Leu Asn Phe Leu Thr Lys Leu Asn Glu Asn His Ser Gly Glu Leu Trp
          195          200          205
Lys Gly Arg Trp Gln Gly Asn Asp Ile Val Val Lys Val Leu Lys Val
210          215          220
Arg Asp Trp Ser Thr Arg Lys Ser Arg Asp Phe Asn Glu Glu Cys Pro
225          230          235          240
Arg Leu Arg Ile Phe Ser His Pro Asn Val Leu Pro Val Leu Gly Ala
          245          250          255
Cys Gln Ser Pro Pro Ala Pro His Pro Thr Leu Ile Thr His Trp Met
          260          265          270
Pro Tyr Gly Ser Leu Tyr Asn Val Leu His Glu Gly Thr Asn Phe Val
          275          280          285
Val Asp Gln Ser Gln Ala Val Lys Phe Ala Leu Asp Met Ala Arg Gly
290          295          300
Met Ala Phe Leu His Thr Leu Glu Pro Leu Ile Pro Arg His Ala Leu
305          310          315          320
Asn Ser Arg Ser Val Met Ile Asp Glu Asp Met Thr Ala Arg Ile Ser
          325          330          335
Met Ala Asp Val Lys Phe Ser Phe Gln Cys Pro Gly Arg Met Tyr Ala
          340          345          350
Pro Ala Trp Val Ala Pro Glu Ala Leu Gln Lys Lys Pro Glu Asp Thr
          355          360          365
Asn Arg Arg Ser Ala Asp Met Trp Ser Phe Ala Val Leu Leu Trp Glu
          370          375          380
Leu Val Thr Arg Glu Val Pro Phe Ala Asp Leu Ser Asn Met Glu Ile
385          390          395          400
Gly Met Lys Val Ala Leu Glu Gly Leu Arg Pro Thr Ile Pro Pro Gly
          405          410          415
Ile Ser Pro His Val Cys Lys Leu Met Lys Ile Cys Met Asn Glu Asp
          420          425          430
Pro Ala Lys Arg Pro Lys Phe Asp Met Ile Val Pro Ile Leu Glu Lys

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435  
Met Gln Asp Lys  
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440

445

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<212> PRT  
<213> Homo sapiens

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Arg	Leu	Trp	Leu	Asp	Asn	Thr	Glu	Asn	Asp	Leu	Asn	Gln	Gly	Asp	Asp
			20					25					30		
His	Gly	Phe	Ser	Pro	Leu	His	Trp	Ala	Cys	Arg	Glu	Gly	Arg	Ser	Ala
		35					40					45			
Val	Val	Glu	Met	Leu	Ile	Met	Arg	Gly	Ala	Arg	Ile	Asn	Val	Met	Asn
		50				55					60				
Arg	Gly	Asp	Asp	Thr	Pro	Leu	His	Leu	Ala	Ala	Ser	His	Gly	His	Arg
65					70					75					80
Asp	Ile	Val	Gln	Lys	Leu	Leu	Gln	Tyr	Lys	Ala	Asp	Ile	Asn	Ala	Val
				85					90					95	
Asn	Glu	His	Gly	Asn	Val	Pro	Leu	His	Tyr	Ala	Cys	Phe	Trp	Gly	Gln
			100					105					110		
Asp	Gln	Val	Ala	Glu	Asp	Leu	Val	Ala	Asn	Gly	Ala	Leu	Val	Ser	Ile
		115					120					125			
Cys	Asn	Lys	Tyr	Gly	Glu	Met	Pro	Val	Asp	Lys	Ala	Lys	Ala	Pro	Leu
		130				135					140				
Arg	Glu	Leu	Leu	Arg	Glu	Arg	Ala	Glu	Lys	Met	Gly	Gln	Asn	Leu	Asn
145					150					155					160
Arg	Ile	Pro	Tyr	Lys	Asp	Thr	Phe	Trp	Lys	Gly	Thr	Thr	Arg	Thr	Arg
				165					170					175	
Pro	Arg	Asn	Gly	Thr	Leu	Asn	Lys	His	Ser	Gly	Ile	Asp	Phe	Lys	Gln
			180					185					190		
Leu	Asn	Phe	Leu	Thr	Lys	Leu	Asn	Glu	Asn	His	Ser	Gly	Glu	Leu	Trp
		195					200					205			
Lys	Gly	Arg	Trp	Gln	Gly	Asn	Asp	Ile	Val	Val	Lys	Val	Leu	Lys	Val
	210					215					220				
Arg	Asp	Trp	Ser	Thr	Arg	Lys	Ser	Arg	Asp	Phe	Asn	Glu	Glu	Cys	Pro
225					230					235					240
Arg	Leu	Arg	Ile	Phe	Ser	His	Pro	Asn	Val	Leu	Pro	Val	Leu	Gly	Ala
				245					250					255	
Cys	Gln	Ser	Pro	Pro	Ala	Pro	His	Pro	Thr	Leu	Ile	Thr	His	Trp	Met
			260					265					270		
Pro	Tyr	Gly	Ser	Leu	Tyr	Asn	Val	Leu	His	Glu	Gly	Thr	Asn	Phe	Val
		275					280					285			
Val	Asp	Gln	Ser	Gln	Ala	Val	Lys	Phe	Ala	Leu	Asp	Met	Ala	Arg	Gly
	290						295				300				
Met	Ala	Phe	Leu	His	Thr	Leu	Glu	Pro	Leu	Ile	Pro	Arg	His	Ala	Leu
305					310					315					320
Asn	Ser	Arg	Ser	Val	Met	Ile	Asp	Glu	Asp	Met	Thr	Ala	Arg	Ile	Ser
				325					330					335	
Met	Ala	Asp	Val	Lys	Phe	Ser	Phe	Gln	Cys	Pro	Gly	Arg	Met	Tyr	Ala

Pro	Ala	Trp	Val	Ala	Pro	Glu	Ala	Leu	Gln	Lys	Lys	Pro	Glu	Asp	Thr
	355						360					365			
Asn	Arg	Arg	Ser	Ala	Asp	Met	Trp	Ser	Phe	Ala	Val	Leu	Leu	Trp	Glu
	370					375					380				
Leu	Val	Thr	Arg	Glu	Val	Pro	Phe	Ala	Asp	Leu	Ser	Asn	Met	Glu	Ile
385					390					395					400
Gly	Met	Lys	Val	Ala	Leu	Glu	Gly	Leu	Arg	Pro	Thr	Ile	Pro	Pro	Gly
				405					410					415	
Ile	Ser	Pro	His	Val	Cys	Lys	Leu	Met	Lys	Ile	Cys	Met	Asn	Glu	Asp
			420					425					430		
Pro	Ala	Lys	Arg	Pro	Lys	Phe	Asp	Met	Ile	Val	Pro	Ile	Leu	Glu	Lys
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Met	Gln	Asp	Lys												
	450														

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<211> 256

<212> PRT

<213> Homo sapiens

<220>

<221> Other

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Phe	Gly	Glu	Val	Trp	Met	Gly	Thr	Trp	Asn	Gly	Thr	Thr	Lys	Val	Ala
			20					25					30		
Ile	Lys	Thr	Leu	Lys	Pro	Gly	Thr	Met	Met	Pro	Glu	Ala	Phe	Leu	Gln
			35				40					45			
Glu	Ala	Gln	Ile	Met	Lys	Lys	Leu	Arg	His	Asp	Lys	Leu	Val	Pro	Leu
	50					55				60					
Tyr	Ala	Val	Val	Ser	Glu	Glu	Pro	Ile	Tyr	Ile	Val	Thr	Glu	Phe	Met
65					70				75						80
Thr	Lys	Gly	Ser	Leu	Leu	Asp	Phe	Leu	Lys	Glu	Gly	Glu	Gly	Lys	Phe
				85				90						95	
Leu	Lys	Leu	Pro	Gln	Leu	Val	Asp	Met	Ala	Ala	Gln	Ile	Ala	Asp	Gly
			100					105					110		
Met	Ala	Tyr	Ile	Glu	Arg	Met	Asn	Tyr	Ile	His	Arg	Asp	Leu	Arg	Ala
	115						120					125			
Ala	Asn	Ile	Leu	Val	Gly	Asp	Asn	Leu	Val	Cys	Lys	Ile	Ala	Asp	Phe
	130					135					140				
Gly	Leu	Ala	Arg	Leu	Ile	Glu	Asp	Asn	Glu	Tyr	Thr	Ala	Arg	Gln	Gly
145					150					155					160
Ala	Lys	Phe	Pro	Ile	Lys	Trp	Thr	Ala	Pro	Glu	Ala	Ala	Leu	Tyr	Gly
				165					170					175	
Arg	Phe	Thr	Ile	Lys	Ser	Asp	Val	Trp	Ser	Phe	Gly	Ile	Leu	Leu	Thr
			180					185					190		
Glu	Leu	Val	Thr	Lys	Gly	Arg	Val	Pro	Tyr	Pro	Gly	Met	Val	Asn	Arg
			195				200					205			
Glu	Val	Leu	Glu	Gln	Val	Glu	Arg	Gly	Tyr	Arg	Met	Pro	Cys	Pro	Gln
	210					215					220				
Gly	Cys	Pro	Glu	Ser	Leu	His	Glu	Leu	Met	Lys	Leu	Cys	Trp	Lys	Lys
225					230					235					240
Asp	Pro	Asp	Glu	Arg	Pro	Thr	Phe	Glu	Tyr	Ile	Gln	Ser	Phe	Leu	Glu

245

250

255

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 Lys Ile Leu Met Glu Gln Asp Phe His Ala Glu Arg Val Asn Glu Phe  
 35 40 45  
 Leu Arg Glu Val Ala Ile Met Lys Arg Leu Arg His Pro Asn Ile Val  
 50 55 60  
 Leu Phe Met Gly Ala Val Thr Gln Pro Pro Asn Leu Ser Ile Val Thr  
 65 70 75 80  
 Glu Tyr Leu Ser Arg Gly Ser Leu Tyr Arg Leu Leu His Lys Ser Gly  
 85 90 95  
 Ala Arg Glu Gln Leu Asp Glu Arg Arg Arg Leu Ser Met Ala Tyr Asp  
 100 105 110  
 Val Ala Lys Gly Met Asn Tyr Leu His Asn Arg Asn Pro Ile Val  
 115 120 125  
 His Arg Asp Leu Lys Ser Pro Asn Leu Leu Val Asp Lys Lys Tyr Thr  
 130 135 140  
 Val Lys Val Cys Asp Phe Gly Leu Ser Arg Leu Lys Ala Ser Thr Phe  
 145 150 155 160  
 Leu Ser Ser Lys Ser Ala Ala Gly Thr Pro Glu Trp Met Ala Pro Glu  
 165 170 175  
 Val Leu Arg Asp Glu Pro Ser Asn Glu Lys Ser Asp Val Tyr Ser Phe  
 180 185 190  
 Gly Val Ile Leu Trp Glu Leu Ala Thr Leu Gln Gln Pro Trp Gly Asn  
 195 200 205  
 Leu Asn Pro Ala Gln Val Val Ala Ala Val Gly Phe Lys Cys Lys Arg  
 210 215 220  
 Leu Glu Ile Pro Arg Asn Leu Asn Pro Gln Val Ala Ala Ile Ile Glu  
 225 230 235 240  
 Gly Cys Trp Thr Asn Glu Pro Trp Lys Arg Pro Ser Phe Ala Thr Ile  
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 Met Asp Leu Leu Arg Pro Leu  
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 Met Leu Asn Val Thr Ala Pro Thr Pro Gln Gln Leu Gln Ala Phe Lys  
 35 40 45  
 Asn Glu Val Gly Val Leu Arg Lys Thr Arg His Val Asn Ile Leu Leu  
 50 55 60  
 Phe Met Gly Tyr Ser Thr Lys Pro Gln Leu Ala Ile Val Thr Gln Trp  
 65 70 75 80  
 Cys Glu Gly Ser Ser Leu Tyr His His Leu His Ile Ile Glu Thr Lys  
 85 90 95  
 Phe Glu Met Ile Lys Leu Ile Asp Ile Ala Arg Gln Thr Ala Gln Gly  
 100 105 110  
 Met Asp Tyr Leu His Ala Lys Ser Ile Ile His Arg Asp Leu Lys Ser  
 115 120 125  
 Asn Asn Ile Phe Leu His Glu Asp Leu Thr Val Lys Ile Gly Asp Phe  
 130 135 140  
 Gly Leu Ala Thr Val Lys Ser Arg Trp Ser Gly Ser His Gln Phe Glu  
 145 150 155 160  
 Gln Leu Ser Gly Ser Ile Leu Trp Met Ala Pro Glu Val Ile Arg Met  
 165 170 175  
 Gln Asp Lys Asn Pro Tyr Ser Phe Gln Ser Asp Val Tyr Ala Phe Gly  
 180 185 190  
 Ile Val Leu Tyr Glu Leu Met Thr Gly Gln Leu Pro Tyr Ser Asn Ile  
 195 200 205  
 Asn Asn Arg Asp Gln Ile Ile Phe Met Val Gly Arg Gly Tyr Leu Ser  
 210 215 220  
 Pro Asp Leu Ser Lys Val Arg Ser Asn Cys Pro Lys Ala Met Lys Arg  
 225 230 235 240  
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 Pro Gln Ile Leu Ala Ser Ile Glu Leu Leu Ala Arg Ser Leu Pro  
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31

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<400> 10  
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aactctgac	gcgtagagg	tctagttgcc	tgctctcgga	catccgttca	gcagacacta	240
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